

1     WHAT IS CLAIMED IS:

5

1. A timing controller for a liquid-crystal display panel comprising:

10         a data enable signal detection circuit which detects a data enable signal applied to the timing controller; and

15         a timing generating circuit which controls a display timing of image data to be displayed on the liquid-crystal display panel on the basis of the data enable signal detected by the data enable signal detection circuit.

20

2. The timing controller as claimed in claim 1, wherein the timing generating circuit comprises a first circuit which generates, from the data enable signal, a first start pulse which starts driving each data line of the liquid-crystal display panel, and a second circuit which generates, from the data enable signal, a second start pulse which starts driving scanning lines of the liquid-crystal display panel.

30

3. The timing controller as claimed in claim 1, wherein the timing generating circuit comprises a circuit part which detects a beginning of each frame on the basis of the data enable signal.

35

1                   4. The timing controller as claimed in  
claim 1, further comprising:  
                  a synchronizing signal detection circuit  
which detects vertical and horizontal synchronizing  
5                   signals; and  
                  a pseudo-data-enable signal generating  
circuit which generates a pseudo-data-enable signal  
when the synchronization signal detection circuit  
detects the vertical and horizontal synchronizing  
10                   signals while the data enable signal detection circuit  
does not detect the data enable signal,  
                  wherein the timing generating circuit  
controls the display timing of image data on the basis  
of the pseudo-data-enable signal.  
15

                  5. The timing controller as claimed in  
20                   claim 1, further comprising:  
                  a synchronizing signal detection circuit  
which detects vertical and horizontal synchronizing  
signals; and  
                  a protection circuit which generates a  
25                   pseudo-data-enable signal when the data enable signal  
and the vertical and horizontal synchronizing signals  
are not detected,  
                  wherein the timing generating circuit  
controls the display timing of image data on the basis  
30                   of the pseudo-data-enable signal.

35                   6. A method of controlling a display timing  
for a liquid-crystal display panel, the method  
comprising the steps of:

1                   (a) detecting a data enable signal applied  
together with image data; and

                  (b) controlling the display timing of the  
image data to be displayed on the liquid-crystal  
5 display panel on the basis of the data enable signal  
detected by the step (a).

10

7. A liquid-crystal display device  
comprising:

                  a liquid-crystal display panel having signal  
lines and scanning lines;

15                   a data driver which drives the signal lines;  
                  a gate driver which drives the scanning  
lines; and

                  a timing controller controlling a display  
timing of image data to be displayed on the liquid-  
20 crystal display panel,

                  the timing controller comprising:

                  a data enable signal detection circuit which  
detects a data enable signal applied to the timing  
controller; and

25                   a timing generating circuit which controls  
the display timing on the basis of the data enable  
signal detected by the data enable signal detection  
circuit.

30

8. The liquid-crystal display device as  
claimed in claim 7, wherein the timing generating  
35 circuit comprises a first circuit which generates,  
from the data enable signal, a first start pulse which  
starts driving each of the data lines, and a second

1 circuit which generates, from the data enable signal,  
a second start pulse which starts driving the scanning  
lines.

5

9. The liquid-crystal display device as  
claimed in claim 7, wherein the timing generating  
10 circuit comprises a circuit part which detects a  
beginning of each frame on the basis of the data  
enable signal.

15

10. The liquid-crystal display device as  
claimed in claim 7, further comprising:

a synchronizing signal detection circuit  
20 which detects vertical and horizontal synchronizing  
signals; and

a pseudo-data-enable signal generating  
circuit which generates a pseudo-data-enable signal  
when the synchronization signal detection circuit  
25 detects the vertical and horizontal synchronizing  
signals while the data enable signal detection circuit  
does not detect the data enable signal,

wherein the timing generating circuit  
controls the display timing of image data on the basis  
30 of the pseudo-data-enable signal.

35 11. The liquid-crystal display device as  
claimed in claim 7, further comprising:

a synchronizing signal detection circuit

1     which detects vertical and horizontal synchronizing  
signals; and

          a protection circuit which generates a  
pseudo-data-enable signal when the data enable signal  
5     and the vertical and horizontal synchronizing signals  
are not detected,

          wherein the timing generating circuit  
controls the display timing of image data on the basis  
of the pseudo-data-enable signal.

10

          12. The liquid-crystal display device as  
15     claimed in claim 7, further comprising:

          a synchronizing signal detection circuit  
which detects vertical and horizontal synchronizing  
signals;

          a pseudo-data-enable signal generating  
20     circuit which generates a first pseudo-data-enable  
signal when the synchronization signal detection  
circuit detects the vertical and horizontal  
synchronizing signals while the data enable signal  
detection circuit does not detect the data enable  
25     signal; and

          a protection circuit which generates a  
second pseudo-data-enable signal when the data enable  
signal and the vertical and horizontal synchronizing  
signals are not detected,

30     wherein the timing generating circuit  
controls the display timing of image data on the basis  
of any of the data enable signal, the first pseudo-  
data-enable signal and the second pseudo-data-enable  
signal.

35